

What is claimed is:

1. A fuel injector (1) for fuel injection systems of internal combustion engines, having a solenoid (10); a valve needle (3) acted upon in a closing direction by a return spring (23) to actuate a valve closing member (4), which, together with a valve seat surface (6), forms a sealing seat; an armature (20) connected to the valve needle (3) in a friction-locked manner; and a first guide sleeve (35) which is connected to the valve needle (3); wherein the valve needle (3) is connected to a second guide sleeve (36) in a friction-locked manner, with the armature (20) being situated between the first guide sleeve (35) and the second guide sleeve (36) such that it can move freely in an axial direction; and the armature has a central opening (34), whose the diameter is greater than the diameter of the valve needle (3), as a result of which the armature (20) has radial play with respect to the valve needle (3).
2. The fuel injector according to Claim 1, wherein the first guide sleeve (35) is situated on the supply-side face (37) of the armature (20), and the second guide sleeve (36) is situated on the discharge-side face (38) of the armature (20).
3. The fuel injector according to Claim 1 or 2, wherein the first guide sleeve (35) and the second guide sleeve (36) are welded to the valve needle (3).
4. The fuel injector according to one of Claims 1 to 3, wherein the return spring (23) is supported on the first guide sleeve (35).
5. The fuel injector according to one of Claims 1 to 4, wherein the valve needle (3) protrudes through the armature (20) by way of the central opening (34).

6. The fuel injector according to one of Claims 1 to 5, wherein the valve needle (3) is rotationally mounted in the sealing seat.
7. The fuel injector according to Claim 6, wherein the valve needle (3) is formed to be axially symmetric.
8. The fuel injector according to one of Claims 1 to 7, wherein a first gap (43) is formed between the supply-side face (37) of the armature (20) and the first guide sleeve (35).
9. The fuel injector according to Claim 8, wherein a second gap (44) is formed between the discharge-side face (38) of the armature (20) and the second guide sleeve (36).
10. The fuel injector according to one of the preceding claims, wherein the guide sleeves (35, 36) each have a wedge-shaped surface (39, 40).
11. The fuel injector according to Claim 10, wherein the wedge-shaped surfaces (39, 40) are each facing towards the armature (20).
12. The fuel injector according to Claim 11, wherein a first wedge-shaped elevation (41) on the supply-side face (37) of the armature (20) matches the wedge-shaped surface (39) of the first guide sleeve (35).
13. The fuel injector according to Claim 11 or 12, wherein a second wedge-shaped elevation (42) on the discharge-side face (38) of the armature (20) matches the wedge-shaped surface (40) of the second guide sleeve (36).

14. The fuel injector according to Claim 11,
wherein the armature (20) has elevations (41, 42) which
are formed as a crown or a spherical cap.